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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/687,776	10/20/2003	Kyung Su Chae	0465-0990P	9604
2292 7590 09/29/2010 BIRCH STEWART KOLASCH & BIRCH PO BOX 747 FALLS CHURCH, VA 22040-0747				
EXAMINER				
MILLER, MICHAEL G				
ART UNIT		PAPER NUMBER		
1712				
NOTIFICATION DATE		DELIVERY MODE		
09/29/2010		ELECTRONIC		

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

mailroom@bskb.com

### Office Action Summary

**Application No.**

10/687,776

**Applicant(s)**

CHAE ET AL.

**Examiner**

MICHAEL G. MILLER

**Art Unit**

1712

**Period for Reply** -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 24 August 2010.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1, 3, 4, 7, 11, 12 and 15-24 is/are pending in the application.
- 4a) Of the above claim(s) 15-22 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1, 3, 4, 7, 11, 12, 23 and 24 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB006)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ ~~Notes of Informal Patent Application~~
- 6) ☐ Other: \_\_\_\_\_

**DETAILED ACTION**

***Continued Examination Under 37 CFR 1.114***

- 1) A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 24 AUG 2010 has been entered.

***Response to Amendment***

- 2) Examiner notes the amendment filed 24 AUG 2010. As a result of the amendment:
  - a) Claims 1, 3-4, 7, 11-12, and 15-24 are pending.
  - b) Claims 15-22 are withdrawn.
  - c) Claims 1 and 7 are amended.
  - d) Claim 24 is new.

***Response to Arguments***

- 3) Applicant's arguments filed 24 AUG 2010 have been fully considered but they are not persuasive.
- 4) In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

- 5) Disclosed examples and preferred embodiments do not constitute a teaching away from a broader disclosure or nonpreferred embodiments. *In re Susi*, 440 F.2d 442, 169 USPQ 423 (CCPA 1971).
- 6) Applicant's first argument is that '384 does not teach placing the drying part above the printing part. Examiner notes that functionality is taught by '667 and is not required to be taught in '384.
- 7) Applicant's second argument is that all the process modules of '384 are disclosed in the preferred embodiment as being disposed linearly with regards to each other. Examiner notes that '384 teaches that its linear embodiment is only exemplary and that the units can be individual with substrates transferred individually (Column 18 Lines 38-45).
- 8) Applicant concludes from the first and second arguments that the apparatus of '384 does not need to move a glass substrate in the vertical direction. Examiner points out that to fulfill the claim limitations, the apparatus need only be capable of doing so, not be required to do so. '384 Column 14 Line 60 – Column 15 Line 27 details a robot capable of motion in the vertical and radial directions of cylindrical coordinates.
- 9) Applicant's third argument is that the robot in the preferred embodiment transfers the substrate from the color apparatus to the discharge conveyor and therefore cannot be the required transferring part. Examiner notes that since the prior art discloses modularity of the process parts, it would be a simple matter of design choice as to where a given robot takes a substrate from and delivers it to.

- 10) Applicant's fourth argument is that the robot transfer mechanism of '667 is not analogous to the robot transfer mechanism of '384. Examiner points out that '667 was not cited in any part for its robot transfer mechanism, but rather was cited for its teaching of disposing process modules above each other for the purpose of saving floor space. Therefore, Applicant's arguments in this vein have been considered but are ultimately moot.

***Claim Rejections - 35 USC § 103***

- 11) The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:
- a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.
- 12) The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:
- (1) Determining the scope and contents of the prior art.
  - (2) Ascertaining the differences between the prior art and the claims at issue.
  - (3) Resolving the level of ordinary skill in the pertinent art.
  - (4) Considering objective evidence present in the application indicating obviousness or nonobviousness.
- 13) This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each

claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

- 14) As these claims are drawn to a device, portions of the claim which do not define physical structure will be given limited patentable weight to the extent that they provide requirements that the device must be capable of.
- 15) Claims 1, 3-4, 7, 11-12 and 23-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sato (US Patent 6,331,384, hereinafter '384) and Fairbairn et al (US Patent 6,176,667, hereinafter '667).
- 16) With regard to Claim 1, '384 teaches a device usable for forming an alignment layer of a display apparatus, the device comprising:
- a) A printing part (Column 12 Lines 36-64, specifically the stage 52) for printing an alignment layer on a substrate, and including a print table fixing the substrate (the stage 52) and at least one inkjet head spraying an alignment material onto the substrate (Column 12 Lines 36-49 specifically);
  - b) A drying part (Column 13 Lines 1-15, specifically referencing heating apparatus 208) for drying the alignment layer, and including a dry table fixing and heating the substrate ('384 Column 10 Lines 62-65 teaches an oven; Column 9 Lines 47-50 teach that hot plates and hot-air ovens are interchangeable in this process);
  - c) A transferring part (Column 14 Lines 36-49 discussing conveyors and robots) for transferring the substrate from the printing part to the drying part (Column 18

Lines 38-45 teaches that the units can be individual modules with substrates transferred individually; it would be a matter of design choice to control the order in which substrates are transferred between modules), and including a transfer robot lifting the substrate in a vertical direction and placing the substrate on the dry table ('384 Column 14 Line 60 – Column 15 Line 27 details a robot capable of motion in the vertical and radial directions of cylindrical coordinates; choosing a robot for this transfer would be one of a finite number of choices that a person skilled in the art would be able to choose between with a reasonable expectation of success);

- d) Wherein the at least one inkjet head ('384 Column 12 Lines 36-49) is positioned above the printing part ('384 Figure 7 shows the inkjet head above the printing part).
- e) '384 does not teach that the drying part is disposed directly and vertically above the printing part. However, '384 teaches that its linear embodiment is only exemplary and that the units can be individual with substrates transferred individually (Column 18 Lines 38-45).
- f) '667 teaches that stacking process chambers above each other can reduce the floor space needed for a process, allowing for more efficient use of space. This speaks to a problem stated by Applicant of more efficiently using clean room space. Further, '667 shows a pair of enclosed modules aligned directly over/under each other (Figure 1, items A1 and A2; Column 3 Lines 11-19).

- g) Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention was made to have modified the apparatus of '384 by adding the teaching of '667 to stack the portions of the apparatus because '384 teaches that the portions of the apparatus can be modular and '667 teaches that stacking modular apparatuses improves the optimization of floor space.
- h) As far as the limitation of disposing the drying part above the printing part, this claim would have been obvious because a person of ordinary skill has good reason to pursue the known options with his or her technical grasp. If this leads to the anticipated success, it is likely the product not of innovation but of ordinary skill and common sense. In a stacked system consisting of a printing part and a drying part, there are two permutations that these can be stacked in (e.g., drying over printing and printing over drying). One of ordinary skill in the art could have chosen from either of these options with an equally reasonable expectation of success. '384/'667 discloses the claimed invention except for the relative location of the drying and printing parts. It would have been an obvious matter of design choice to locate the drying part directly and vertically above the printing part, since it has been held that rearranging parts of an invention only involves routine skill in the art. *In re Japikse*, 86 USPQ 70.
- i) '384 teaches a print table to receive the substrate and an inkjet head ('384 Column 12 Lines 36 – 51, talking about moving a print stage and driving an inkjet head assembly); as each of these parts can be moved independently, the apparatus can function by or by moving the inkjet over the stationary substrate.



The references do not teach a preferred direction of motion; however, the claim would have been obvious because “a person of ordinary skill has good reason to pursue the known options with his or her technical grasp. If this leads to the anticipated success, it is likely the product not of innovation but of ordinary skill and common sense.” There are three classes of linear planar motion possible – horizontal and parallel to a defined axis, horizontal and perpendicular to a defined axis, or transverse to a defined axis.

17)With regard to Claim 3, ‘384/’667 teaches the device of claim 1, wherein:

- a) At least one array of inkjet heads is positioned in one line according to a long side or a short side of the substrate (‘384 Column 19 Lines 42-49) to print the alignment layer onto the long or short side of the substrate at one time.

18)With regard to Claim 4, ‘384/’667 teaches the device of claim 3, wherein:

- a) A size and an arrangement of the inkjet heads are varied according to a size and a kind of the substrate (‘384 Column 8 Line 62 – Column 9 Line 26; if a mono-color filter is desired, all the print heads print one color as discussed in Column 18 Lines 46-49; and the width of printing is determined by the maximum width of the substrate as discussed in Column 19 Lines 42-49).

19)With regard to Claim 7, ‘384/’667 teach that the coatings are applied by inkjet deposition. Polyimide PI is capable of being deposited by inkjet and therefore the device taught in claim 1 is capable of meeting the limitation of claim 7.

20)With regard to Claim 11, it is well known in the art that alignment layers can be provided in LCD devices. Therefore, it would have been obvious to a person having

ordinary skill in the art at the time the invention was made to have used a device capable of printing alignment layers for the purpose of printing alignment layers in LCD devices.

21)With regard to Claim 12, '384/'667 teaches that it is known to manufacture electronic components in clean rooms ('667 Column 1 Lines 5 – 30).

22)With regards to Claim 23, '384 Column 19 Lines 42-49 discuss the concept of an inkjet head having a width equal to that of the substrate.

23)With regards to Claim 24, '384/'667 discloses the claimed invention except for the drying part having multiple hot plates for emitting heat ('384 Column 10 Lines 62-65 teaches an oven; Column 9 Lines 47-50 teach that hot plates and hot-air ovens are interchangeable in this process). It would have been an obvious matter of design choice to add at least a second hot plate to the apparatus already disclosed, since it has been held that mere duplication of the essential working parts of a device involves only routine skill in the art. *St. Regis Paper Co. v. Bemis Co.*, 193 USPQ 8.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MICHAEL G. MILLER whose telephone number is (571)270-1861. The examiner can normally be reached on M-F 9-6.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Cleveland can be reached on (571) 272-1418. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Michael G. Miller/  
Examiner, Art Unit 1712

/Michael Cleveland/  
Supervisory Patent Examiner, Art Unit 1712